

Application Serial No. 10/717,912

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in this application:

**Listing of Claims:**

What is claimed is:

1. (Currently Amended) A system for measuring muscle strength of a human thumb, comprising:

- a first structure contacting at least a portion of a back side of the hand;
- a second structure contacting at least a portion of a palm of the hand, said first and second structures configured to adjustably secure the hand in a substantially fixed position;
- a ring for receiving a thumb;
- a load cell comprising electronics to record a force generated by the thumb; and
- a mechanical assembly linking said ring and said load cell to transmit the forces from said ring to said load cell, wherein said mechanical assembly comprises a threaded shaft and a nut, and said ring is configured to transmit the force generated by the thumb to said threaded shaft and said nut.

2. (Cancelled)

Application Serial No. 10/717,912

3. (Currently Amended) The system according to claim 2 1, wherein said mechanical assembly further comprises a beam positioned substantially perpendicular to said threaded shaft, said beam transmitting the load from said threaded shaft to said load cell.

4. (Currently Amended) The system according to claim 2 1, further comprising a knob for rotating said threaded shaft to adjust the position of said nut on said threaded shaft.

5. (Original) The system according to claim 1, wherein said second structure is in a substantially fixed position.

6. (Original) The system according to claim 1, wherein said first structure is movable to secure the hand in the substantially fixed position.

7. (Previously Presented) The system according to claim 1, further comprising:  
a push plate;  
at least one push rod contacting said push plate and said first structure;  
a bolt secured to said first structure; and  
a handle threaded to negotiate said bolt, wherein upon rotating said handle in a first direction, said push plate, said at least one push rod and said second structure move in a direction to adjustably secure the hand in the substantially fixed position.

Application Serial No. 10/717,912

8. (Original) The system according to claim 1, wherein said electronics provides the capability to at least one of: a) display and record forces in at least one of metric and English units; b) display and record a peak force; c) continuously display and record forces generated by the thumb; and d) reset the system prior to a next exertion of force by the thumb.

9. (Original) The system according to claim 1, further comprising a connection whereby data recorded by said system can be transmitted to a computing device.

10. (Currently Amended) A system for measuring muscle strength of the human thumb, comprising:

means for contacting at least a portion of a back side of the hand;

means for contacting at least a portion of a palm of the hand, at least one of said

means for contacting the back side and said means for contacting the palm

configured to adjustably secure the hand in a substantially fixed position;

means for receiving a thumb;

means for recording a force generated by the thumb; and

means for linking said ring and said load cell to transmit the force from said ring to said load cell.

Application Serial No. 10/717,912

11. (Currently Amended) A system for measuring muscle strength of the human thumb, comprising:

- a first plate contacting at least a portion of a back side of the hand;
- a second plate contacting at least a portion of a palm of the hand, said first and second plates configured to secure the hand in a substantially fixed position;
- a ring for receiving a thumb of the hand;
- a load cell comprising electronics to record a first force generated by the thumb moving in at least a first direction and to record a second force generated by the thumb moving in at least a second direction; and
- a mechanical assembly linking said ring and said load cell to transmit the force from said ring to said load cell.

12. (Currently Amended) A system for measuring muscle strength of a human thumb, comprising:

- a clamping apparatus to adjustably secure a hand in a substantially fixed position;
- a structure for receiving a thumb of the hand while the hand is in the substantially fixed position;
- a force measuring device to record a force generated by the thumb in ~~at least one of~~ abduction and adduction directions; and
- a mechanical assembly transmitting the force generated by the thumb to said force measuring device.

Application Serial No. 10/717,912

13. (Original) The system according to claim 12, wherein said force measuring device continuously records forces generated by the thumb over a finite period of time.

14. (Original) The system according to claim 12, wherein said structure is adjustable with respect to the hand when the hand is in the substantially fixed position.

15. (Currently Amended) A method for measuring muscle strength of a human thumb, comprising:

adjustably securing a hand in a substantially fixed position:

placing a thumb of the hand in a structure that enables the thumb to generate a

measurable force in ~~at least one of the~~ abduction and adduction directions; and recording the force in the abduction and the adduction directions.

16. (Original) The method according to claim 15, further comprising:

providing electronics to record the force generated by the thumb; and

providing a mechanical assembly linking the structure to the electronics to transmit the force from the structure to the electronics.

17. (Currently Amended) The method according to claim 15, wherein the thumb can move in at least a first direction and a ~~substantially opposing second~~ direction, and said recording the force includes recording the force in abduction and adduction directions responsive to separate movements of the thumb in the first and second directions.

Application Serial No. 10/717,912

18. (Original) The method according to claim 15, further comprising the step of adjusting the position of at least a portion of the structure with respect to the hand.

19. (Original) The method according to claim 15, further comprising the step of at least one of:

- a) displaying the force in at least one of metric and English units;
- b) displaying and recording a peak force generated by the thumb; and
- c) continuously displaying and recording forces generated by the thumb.

20. (Original) The method according to claim 15, wherein the force is recorded by a first system, and further comprising the step of:  
transmitting the recorded force to a second system.

Application Serial No. 10/717,912

21. (Currently Amended) A system for measuring muscle strength of a thumb or a finger of a hand, comprising:

a securing apparatus to adjustably secure a hand in a substantially fixed position;

a structure, connected to said securing apparatus, to receive the thumb or finger of the hand while the hand is in the substantially fixed position via said securing apparatus;

a force measuring and recording device, responsively connected to said structure, to measure ~~at least one force~~ first and second forces generated by the thumb or finger in said structure in ~~at least one of~~ abduction and adduction directions respectively, and record the ~~at least one force~~ first and second forces to be used in at least one of diagnostic and therapeutic treatment of the thumb or finger.

22. (Original) The system according to claim 21, wherein a quantitative measure of forces generated in pure palmar thumb adduction and abduction to serve as an adjunct to grip and pinch strength in the following conditions:

osteo-arthritis pre-operation and post-operation;

rheumatoid arthritis pre-operation and post-operation;

thumb reconstruction after trauma;

reconstruction of congenital differences;

following tendon transfer surgery; and/or

following tumor resection and reconstruction.

Application Serial No. 10/717,912

23. (Original) The system according to claim 21, wherein said system significantly substantially and/or completely isolates one or more muscles that are enervated by the motor branch of the median nerve or terminal motor branches of the ulnar nerve.

24. (Currently Amended) A method of measuring muscle strength of a thumb or a finger of a hand, comprising at least one of the sequential, non-sequential and sequence independent steps of:

adjustably securing the hand in a substantially fixed position;

receiving the thumb or the finger of the hand in a force measuring device;

measuring the force generated by the thumb or the finger in ~~at least one of the~~

~~abduction and~~ adduction directions; and

transmitting the force generated by the thumb or the finger to be used in at least one

of diagnostic and therapeutic treatment of the thumb or finger.



Application Serial No. 10/717,912

25. (Original) The method according to claim 24, wherein a quantitative measure of forces generated in pure palmar thumb adduction and abduction serve as an adjunct to grip and pinch strength in the following conditions:

osteo-arthritis pre-operation and post-operation;  
rheumatoid arthritis pre-operation and post-operation;  
thumb reconstruction after trauma;  
reconstruction of congenital differences;  
following tendon transfer surgery; and/or  
following tumor resection and reconstruction.

26. (Original) The method according to claim 24, wherein one or more muscles that are enervated by the motor branch of the median nerve are significantly, substantially and/or completely isolated.